

CLAIMS:

1. A two speed transmission system for a marine craft comprising:
 - an input shaft;
 - an output shaft,

5 a first gear train for connecting the input shaft to the output shaft for driving the same in a first gear;

a second gear train connecting the input shaft to the output shaft for driving the output shaft in a second gear; and

10 a clutch means for connecting the input shaft to the output shaft at a gear ratio other than one to one.
2. A two speed transmission system as claimed in claim 1 wherein the output shaft and input shaft are parallel and linked by gear trains for first and second gears.
3. A two speed transmission system as claimed in claim 1 wherein, the output shaft and input shaft are co-axial and linked via a lay shaft extending parallel to the input and 15 output shafts.
4. A two speed transmission system as claimed in any preceding claim wherein a one way clutch means is incorporated in the first gear train such that when second gear is engaged first gear over-runs.
5. A two speed transmission system as claimed in any preceding claim including a 20 further friction clutch means connecting first gear to the output shaft.
6. A two speed transmission system as claimed in any preceding claim wherein the clutch means is located on the output shaft either between the first and second gears.
7. A two speed transmission system as claimed in any preceding claim wherein the first and second gears are located between the clutches and the output end of the output 25 shaft.
8. A two speed transmission system including a first clutch means for connecting an input shaft to a co-axial output shaft;
 - a lay shaft typically arranged parallel to the input and output shafts;
 - 30 a first gear train for connecting the input shaft to the lay shaft for driving the same via the input shaft;
 - a second gear train connecting the lay shaft to the output shaft;
 - wherein the first clutch means connects the input shaft to the output shaft; and
 - a second clutch means connects the input shaft to the output shaft via the lay shaft giving a gear ratio other than one to one.

9. A two speed transmission system as claimed in any preceding claim wherein the gear trains are selected to provide a higher gearing of the lay shaft when the second clutch is engaged.
10. A two speed transmission system as claimed in any one of claims 1 to 8 wherein
5 the gear trains are selected to provide a lower gearing of the lay shaft when the second clutch is engaged.
11. A two speed transmission system as claimed in any one of claims 5 or 8 to 11 further including a control system for controlling the first and second clutches.
12. A two speed transmission system as claimed in claim 11 further including
10 sensors for supplying information to the control system, the sensors including one or more of clutch pressure sensors, sensors measuring the speed of the input shaft and output shafts respectively and sensors providing information relating to the position of gears in the gear trains.
13. A two speed transmission system as claimed in claim 11 further including one or
15 more control valves and electro-hydraulic solenoids to provide controlled clutch slip for docking and other functions where very low speeds of the order of a few knots may be desired.
14. A watercraft incorporating a two speed transmission system as claimed in any preceding claim.
- 20 15. A watercraft as claimed in claim 14 wherein the transmission is incorporated as part of a stern drive unit.